

CLAIMS

Having thus described our invention, what we claim as new and desire to secure by Letters Patent is as follows:

1 1. A fuel injector, comprising:

2 a spool slidable between a first position and a second position;
3 an open and closed solenoid positioned on respective sides of the spool;
4 an intensifier body positioned proximate to the spool;
5 a piston slidably positioned within the intensifier body;
6 a plunger being in contact with the piston, the plunger having a cross bore and a
7 longitudinal bore in fluid communication with the cross bore;
8 a high pressure chamber formed below the plunger;
9 means for supplying fuel to a nozzle in fluid communication with the high
10 pressure chamber, the means for supplying fuel extending within at least the intensifier
11 body; and
12 means for supplying a pilot quantity of fuel between the high pressure chamber
13 and the means for supplying fuel to the fuel nozzle.

1 2. The fuel injector of claim 1, wherein the means for supplying a pilot quantity of fuel is
2 a throttle.

1 3. The fuel injector of claim 2, wherein the throttle has a cross section smaller than the
2 means for supplying fuel to the nozzle.

1 4. The fuel injector of claim 2, further comprising a check disk positioned below the
2 plunger, the throttle being located within the check disk.

1 5. The fuel injector of claim 4, wherein the throttle provides fluid communication
2 between the high pressure chamber and the means for supplying fuel to the fuel nozzle
3 extending within the check disk.

1 6. The fuel injector of claim 2, wherein the throttle is located within the plunger.

1 7. The fuel injector of claim 6, wherein the throttle provides fluid communication
2 between the high pressure chamber and the means for supplying fuel to the fuel nozzle
3 extending within the intensifier body.

1 8. The fuel injector of claim 7, wherein:
2 the means for supplying fuel to the fuel nozzle extending within the intensifier
3 body is a fuel bore; and
4 the throttle provides fluid communication between the longitudinal bore of the
5 plunger and fuel bore.

1 9. The fuel injector of claim 7, wherein the throttle is a clearance between the plunger
2 and a side wall of the intensifier body.

1 10. The fuel injector of claim 7, wherein the throttle is positioned within the high
2 intensity body.

1 11. The fuel injector of claim 2, wherein the pilot quantity of fuel is supplied through the
2 throttle during a pre stroke phase of the plunger.

1 12. The fuel injector of claim 11, further comprising a groove positioned within the

09983040-102201

2 intensifier body and in fluid communication with the means for supplying fuel extending
3 within at least the intensifier body.

1 13. The fuel injector of claim 12, wherein the pre stroke phase of the plunger is defined as
2 a downward distance prior to the cross bore communicating with the groove of the
3 intensifier body.

1 14. The fuel injector of claim 1, wherein the means for supplying fuel to the fuel nozzle
2 are fuel bores extending through at least the check disk and the intensifier body, the fuel
3 bore of the check disk and the fuel bore of the intensifier body being in axial alignment.

1 15. A check disk for a fuel injector, comprising:
2 a body having an upper surface and a lower surface;
3 a fuel bore extending between the upper surface and the lower surface;
4 a throttle providing fluid communication from the upper surface of the body to the
5 fuel bore; and
6 a fuel inlet check valve positioned within the check disk, the fuel inlet check valve
7 regulating fuel from a fuel storage to the upper surface of the body.

1 16. A plunger for a fuel injector, comprising:
2 a plunger body;
3 a cross bore positioned within the plunger body;
4 a longitudinal bore in fluid communication with the cross bore; and
5 a throttle positioned within the plunger body and having a smaller cross section
6 than the longitudinal bore.

1 17. The plunger of claim 16, wherein the throttle is in fluid communication with the

2 longitudinal bore.

1 18. An intensifier body of a fuel injector, comprising;

2 a fuel bore adapted to provide fuel to a nozzle of the fuel injector;

3 a throttle in fluid communication with the fuel bore, the throttle having a smaller

4 cross section than the fuel bore.

FOUO 0403550